CLAIMS

1. Transmission device for prioritising data elements of a
    data stream for transmission to a receiving device,
    comprising:

    decodability determining means for determining a
    decodability of a current data element, the decodability
    indicating the extent to which the current data element
    is decodable at the receiving device;

    prioritising means for assigning a priority to the
    current data element based on the determined
    decodability; and

    a transmitter controller for scheduling a transmission
    of the current data element to the receiving device
    based on the priority.

2. Transmission device of claim 1, wherein the decodability
    determining means is adapted to determine the
    decodability of the current data element using
    information on which of a plurality of data elements
    were transmitted to the receiving device.

3. Transmission device of one of the preceding claims,
    wherein the decodability determining means is adapted to
    receive a feedback from the receiving device indicating
    which of the data elements were received error free.

4. Transmission device of one of the preceding claims,
    wherein the decodability determining means is adapted
    to, if the current data element requires a reference
    data element for being fully decodable at the receiving
    device, the set decodability of the current data element
    equal to the decodability of the reference data element,
    when the reference data element has been transmitted.

5. Transmission device of one of the preceding claims, wherein the decodability determining means is adapted to, if the current data element requires multiple reference data elements for being fully decodable at the receiving device, determining the decodability of the current data element based on the decodabilities of the reference data elements.

6. Transmission device of one of the preceding claims, wherein the decodability determining means is adapted to recalculate the decodability of at least a portion of the data elements upon transmission of the current data element.

7. Transmission device of one of the preceding claims, wherein, upon transmission of the current data element, the decodability determining means is adapted to recalculate a decodability of data elements indicated in a decoding dependency record of the current data element, the decoding dependency record indicating all data elements requiring the current data element for decoding.

8. Transmission device of one of the preceding claims, wherein, the data stream comprises: independent data elements being independent from other data elements and dependent data elements being dependent on at least one reference data element, wherein the decodability determining means is adapted to set the decodability of an independent data element to a maximum decodability and to set the decodability of a dependent data element equal to the decodability of the reference data element, when the reference data element has been transmitted.

9. Transmission device of one of the preceding claims, wherein the data stream comprises:

intra-blocks being independent from other data elements and the decodability of an intra-block being set to a maximum decodability, indicating that the intra-block is fully decodable at the receiving device;

inter-blocks encoding differences between content of a data element and content of a reference data block, the decodability of an inter-block being set equal to the decodability of the reference data block; and

skip-blocks indicating content requiring content of a reference data block, the decodability of a skip-block being set equal to the decodability of the reference data block.

10. Transmission device of one of the preceding claims, wherein the decodability determining means is adapted to:

determine an average decodability of a number of data elements;

determine a decodability increase of the average decodability of the number of data elements obtainable by transmitting the current data element; and

determine the priority of the current data element based on the decodability increase.

11. Transmission device of claim 9, wherein the prioritising means is adapted to determine the priority of the current data element based on the decodability increase divided by the data element size of the current data element.

12. Transmission device of one of claim 9 and 10, wherein the number of data elements represents data elements of a predetermined time window of the data stream or of the entire data stream.

13. Transmission device of one of the preceding claims, wherein the transmitter controller is adapted to estimate the probability of an error-free transmission over a transmission channel.

14. Transmission device of claim 8, wherein the decodability determining means is adapted to determine the decodability as the product of the extent to which the current data element is decodable at the receiving device and the probability of an error-free transmission of the current data packet over a transmission channel.

15. Transmission device of claim 14, wherein the decodability determining means is adapted to

    set the decodability of an independent data element to the determined probability; and

    set the decodability of a dependent data element to the determined probability times the decodability determined based on the decodability the at least one reference data element.

16. Transmission device of claim 9, wherein the decodability determining means is adapted to set:

    the decodability of an intra-block equal to the probability of an error-free transmission;

    the decodability of an inter-block equal to the decodability of the reference data block multiplied by the probability of an error-free transmission; and

the decodability of a skip-block independent of the
probability of an error-free transmission.

5   17.   Transmission device of one of the preceding claims,
          wherein the decodability determining means is adapted to
          set the decodability of the reference data element equal
          the decodability of a data frame containing the
          reference data element.

10

     18.   Transmission device of one of the preceding claims,
          wherein the data stream is a video stream and motion
          compensation is disregarded.

15   19.   Method for prioritising data elements of a data stream
          for transmission to a receiving device, comprising:

          determining a decodability of a current data element,
          the decodability indicating the extent to which the

20   current data element is decodable at the receiving
          device;

          assigning a priority to the current data element based
          on the determined decodability; and

25

          scheduling a transmission of the current data element to
          the receiving device based on the priority.

     20.   Method of claim 19, including determining the

30   decodability of the current data element using
          information on which of a plurality of data elements
          were transmitted to the receiving device.

     21.   Method of one of the claims 19 and 20, including

35   receiving a feedback from the receiving device
          indicating which of the data elements were received
          error free.

22. Method of one of the claims 19 to 21, wherein, if the current data element requires a reference data element for being fully decodable at the receiving device, the decodability of the current data element is set equal to the decodability of the reference data element, when the reference data element has been transmitted.

23. Method of one of the claims 19 to 22, wherein, if the current data element requires multiple reference data elements for being fully decodable at the receiving device, the decodability of the current data element is determined based on the decodabilities of the reference data elements.

24. Method of one of the claims 19 to 23, including recalculating the decodability of at least a portion of the data elements upon transmission of the current data element.

25. Method of one of the claims 19 to 24, including, upon transmission of the current data element, recalculating a decodability of data elements indicated in a decoding dependency record of the current data element, the decoding dependency record indicating all data elements requiring the current data element for decoding.

26. Method of one of the claims 19 to 25, wherein, the data stream comprises: independent data elements being independent from other data elements and dependent data elements being dependent on at least one reference data element, wherein the decodability of an independent data element is set to a maximum decodability and the decodability of a dependent data element is set equal to the decodability of the reference data element, when the reference data element has been transmitted.

27.   Method of one of the claims 19 to 26, wherein the data
       stream comprises:

       intra-blocks being independent from other data elements
5   and the decodability of an intra-block being set to a
       maximum decodability, indicating that the intra-block is
       fully decodable at the receiving device;

       inter-blocks encoding differences between content of a
10   data element and content of a reference data block, the
       decodability of an inter-block being set equal to the
       decodability of the reference data block; and

       skip-blocks indicating content requiring content of a
15   reference data block, the decodability of a skip-block
       being set equal to the decodability of the reference
       data block.

28.   Method of one of the claims 19 to 27, including
20
       determining an average decodability of a number of data
       elements;

       determining a decodability increase of the average
25   decodability of the number of data elements obtainable
       by transmitting the current data element; and

       determining the priority of the current data element
       based on the decodability increase.
30
29.   Method of claim 28, including determining the priority
       of the current data element based on the decodability
       increase divided by the data element size of the current
       data element.
35
30.   Method of one of claim 28 and 29, wherein the number of
       data elements represents data elements of a

predetermined time window of the data stream or of the
entire data stream.

31. Method of one of the claims 19 to 30, including
     estimating the probability of an error-free transmission
     over a transmission channel.

32. Method of claim 27, including determining the
     decodability as the product of the extent to which the
     current data element is decodable at the receiving
     device and the probability of an error-free transmission
     of the current data packet over a transmission channel.

33. Method of claim 32, including

     setting the decodability of an independent data element
     to the determined probability; and

     setting the decodability of a dependent data element to
     the determined probability times the decodability
     determined based on the decodability the at least one
     reference data element.

34. Method of claim 28, including

     setting the decodability of an intra-block equal to the
     probability of an error-free transmission;

     setting the decodability of an inter-block equal to the
     decodability of the reference data block multiplied by
     the probability of an error-free transmission; and

     setting the decodability of a skip-block independent of
     the probability of an error-free transmission.

35. Method of one of the claims 19 to 34, including setting
     the decodability of the reference data element equal the

decodability of a data frame containing the reference data element.

36. Method of one of the claims 19 to 35, wherein the data
     stream is a video stream and motion compensation is
     disregarded.

37. A program having instructions adapted to carry out the
     method of any one of claims 19 to 36.

38. A computer readable medium, in which a program is
     embodied, wherein the program is to make a data
     processing device execute the method of any one of
     claims 19 to 36.

39. A computer program product comprising the computer
     readable medium of claim 38.